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Arizona Corporation Commission
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To: Arizona Corporation Commission

From: The Arizona Solar Energy Industries Association (AriSEIA)

Date: February 8, 2010

RE: Notice of Inquiry Regarding a Potential Arizona Feed-in-Tariff for Renewable Energy Production; Docket No. E-00000J-09-0505

We would like to thank the Commission for this opportunity to investigate opportunities to accelerate the deployment of renewable energy here Arizona. Feed-in-Tariffs (FITs) have been used in more than 40 countries and are being considered in several states to create and grow solar energy markets. Germany, the pioneer of the FIT program has created the world largest and most sustainable solar market. This market has been created in a country that has about the same solar resource as Southern Alaska.

In Arizona, the Corporation Commission with the input of many stakeholders developed the Renewable Energy Standard and Tariff (REST), which has created a thriving market in the state for a variety of renewable energy technologies. In fact, we are on the second generation of a renewable energy

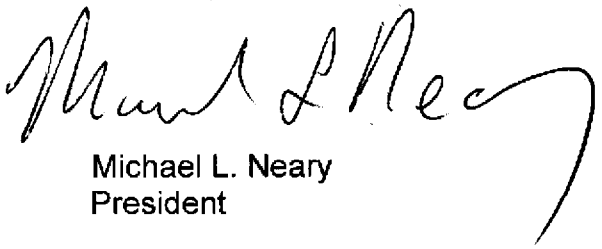
standard with the REST replacing the more modest Environmental Portfolio Standard (EPS).

The Arizona Corporation Commissions efforts to diversify Arizona's mix of power generation and stabilize rates for Arizona's ratepayers through greater use of clean renewable energy has successfully laid the ground work for a vibrant solar and renewable energy market in Arizona. The REST has improved the ability of Arizona utilities to avoid building new fossil fuel power plants and had provided valuable experience integrating distributed energy into the grid. The REST has attracted private investment and created jobs in local communities.

Any efforts to develop a Feed –in-Tariff for Arizona should complement and add to the current programs in order to create a comprehensive market that will take us closer to energy independence. Both the FIT, renewable energy credit purchase programs, and net metering programs can run in parallel as they are different tools that will help us to achieve energy independence.

We feel that the Commissions call for input on a Feed-in-Tariff leading to a productive workshop is an excellent idea that could lead to further development of solar and renewable energy in Arizona. We look forward to participating in the process. Our answers to the Commission's questions follow this letter.

Sincerely



Michael L. Neary
President

Responses to ACC questions: (Docket No. E-00000J-09-0505)

1. **Should the Commission develop a new policy to support procurement of wholesale distributed generation resources?**

The answer to this question depends to a large extent on how "wholesale distributed generation resources" are defined; e.g., within or outside the RES.

In the RES, "Wholesale Distributed Generation Component" is defined as "non-utility owner of Eligible Renewable Energy Resources that are located within the distribution system and that do not require a transmission line over 69 kv to deliver power at wholesale to an Affected Utility to meet its Annual Renewable Energy Requirements." Section R14-2-1802 lists the "Eligible Renewable Energy Resources," all of which produce electricity.

Therefore if a FIT cannot be applied to distributed thermal resources under the RES, AriSEIA believes that the program definition must be modified to include thermal resources or that a FIT should possibly be funded under another program. AriSEIA also supports inclusion of all eligible resources, not just solar; however, throughout this document we normally use the word solar.

Further, Section R14-2-1805E, provides that "[a]n affected utility may satisfy no more than 10 percent of its annual Distributed Renewable Energy Requirement from Renewable Energy Credits derived from distributed Renewable Energy Resources that are non-utility owned generators that sell electricity wholesale to Affected Utilities. This Wholesale Distributed Generation Component shall qualify for the non-residential portion of the Distributed Renewable Energy Requirement."

AriSEIA also wishes to refer to the 10% limit contained the in the Rule. As the Commission is aware, APS claims that they have exceeded their RES requirements for the non-residential sector based on the total generating capacity of projects for which incentive reservation applications have been submitted. If "wholesale distributed generation resources" were part of this (non-residential DE) category and all projects for which reservation applications have been submitted were actually built, it could be argued that new policies are not necessary.

However, AriSEIA members who have witnessed the development of other markets such as California and New Jersey are aware that the number of projects that come to fruition are almost always lower than the number of projects

for which applications are submitted. This reflects the nature of the market and the challenges involved in developing a non-residential solar project.

AriSEIA's members are also aware that the current policies in Arizona have left "gaps" in the market where certain types of projects are not viable. Two examples of such project types are net leased buildings, and buildings with significant roof space but a relatively low load (such as parking garages and storage facilities). In this instance, a FIT could be an effective policy for making such projects viable. Further, it appears that "wholesale generation" may be a catetory that the Commission has identified.

a. **To what extent can AZ look to other states/ bodies/ countries to apply lessons learned and best practices on developing a FIT program?**

Arizona can look to countries such as Germany, which has been a leader in introducing a successful FIT program. Other European countries, including France and Italy have introduced FITs, and in North America, the province of Ontario (Canada) as well as Florida, Vermont and California have introduced FITs.

A notable difference between the US (i.e., CA and FL) and non-US FITs lies in the fact that in the US, FITs introduced at the state level do not replace other major incentives such as the federal ITC (Investment Tax Credit) and other tax-related incentives. Rather, a state-specific FIT must be designed to work in concert with these other incentives to maximize the potential for solar development.

It is difficult to identify best practices amongst US-based FIT programs because of their relative newness, but there are a number of other markets both in the US as well as outside the US where RE incentive programs have been in place longer than they have in Arizona and where we can observe the effect of various policies and learn from these.

It is worth noting that two of the most successful solar markets: Germany and California took very different approaches when it came to solar incentives. The common element between these two markets is that incentive levels were attractive enough to stimulate significant investments in solar projects which in turn led to the development of a solar industry that spawned manufacturers, service providers and financial services which revolved around solar.

Recent programs, such as the one at the Sacramento Municipal Utility District, also include resources beyond PV, such as combined heat and power and other types of renewables and energy efficiency. The study by the National Renewable Energy Labs (NREL), *State Clean Energy Policies Analysis (SCEPA) Project: An Analysis of Renewable Energy Feed-in Tariffs* in the United States by

Toby Couture, of E3 *Analytics, and Karlynn* Cory, of the *National Renewable Energy Laboratory,* notes that FITs are appropriate for resources other than PV; therefore, the time it takes to investigate how a FIT program for Arizona could best benefit all technologies would be time well spent.

b. What states/ countries have "model" FIT programs that can provide good insight? What are the various models of FITs, and what are their main distinguishing features?

The main distinguishing features of a FIT program are simplicity and ease of administration (from both the customer as well as the administrator's side) and long term price certainty (typically a fixed rate for 20 years). The fact that a FIT turns every solar electric system, large or small, into a power plant that feeds directly into the grid rather than offsetting a particular load cuts through some of the complexities associated with net metering such as size caps and rate calculations based on time of solar production compared to time of use, etc.

2. Should the Commission develop a new policy to support the development of customer-sited distributed generation through a FIT?

AriSEIA believes there is merit in further exploring the implications of introducing a FIT in AZ, provided that such considerations do not disrupt, or complicate the programs that are already in place as this would have a negative effect on the industry, which is playing an ever expanding role in AZ's economy.

AriSEIA recommends that the Commission hold a workshop and insure that subject matter experts with the appropriate credentials and experience be invited to share their insights with respect to FITs and the relative advantages and disadvantages of such incentives.

The purpose of this response is to outline those and to assist the Commission in making an informed decision that will benefit the industry, as well as the ratepayers and the State in general.

a. Would the adoption of a FIT for customer-sited distributed generation create customer confusion?

As with the adoption of any new policy, consultation with stakeholders and objective, thoughtful design and implementation will minimize the possibility of confusing those whom the policy is intended to benefit. AriSEIA members are among those who will be directly affected by the introduction of a FIT, or any other change in policy. Potential solar system owners/ investors and financing entities are other stakeholder groups that would be directly affected by the introduction of a FIT. AriSEIA encourages the participation of these stakeholders in a workshop to better understand their objectives and concerns, as well as to

insure that each stakeholder group is properly informed on the choices available and the pros and cons of each.

b. If the Commission adopts a FIT designed to address customer-sited distributed generation, should it replace, in whole or in part, UFIs and/or PBIs? Should the FIT be entirely additive to existing incentives?

Replacing all incentives for DE with a FIT would probably result in confusion amongst the various stakeholder groups and would likely disrupt the market. AriSEIA recommends looking at the possibility of using FITs to supplement the current suite of incentives by targeting segments of the solar market that are currently prevented from participating, or somehow placed at a disadvantage under the current incentive regime. These issues can be further addressed in the proposed workshop.

c. What type of incentive (FIT, UFI or PBI) is likely to result in the lowest overall lifetime cost of utilities meeting their annual renewable energy production responsibilities under the REST?

A major element in determining the overall lifetime cost of each of the above incentives depends on the actual amount that these incentives are set at. In order to compare an Up-Front-Incentive to a FIT or PBI, the Net Present Value of the FIT or PBI (since they are paid out over an extended time period) must be compared to the UFI.

Administrative costs are another element that will affect the "lowest cost" calculation.

It is also important to note that in the case of the UFI and PBI, the solar system owner subsidizes at least part of the ROI on the solar system by offsetting part of their electric or gas bill (this subsidy is equivalent to the cost per kWh of the electricity or gas that is being offset by the solar system). Since a FIT involves, for solar electric resources, selling the electricity directly back to the "grid" rather than offsetting the system owner's load, 100% of a FIT's cost must be borne by the program, rather shared with the system owner. This is not true for thermal resources. These are additional issues that should be discussed in a workshop.

d. What are the comparative advantages or disadvantages of a FIT versus a PBI?

While FITs and PBIs are similar in that they are "performance-based" incentives, there is a fundamental – very important - difference between the two approaches. A FIT changes the relationship between the solar system owner and the utility

because the solar system, no matter how small or large, is now a power plant delivering electricity directly to the grid in the case of a solar electric resource. In contrast, a PBI, as defined in the current AZ context, is an incentive meant to operate under the current parameters of how solar is typically implemented in the US, which is to have the solar system operate "behind the meter". This means that the output of a solar system first offsets a load (ie. supplies power to a particular building) and only the surplus production (if any) is fed into the grid.

The difference between the two approaches outlined above shows how a FIT possesses the advantage of not having to deal with the issues related to "net metering" (see 1b). Since in a FIT, the solar electric system feeds directly into the grid, the question of sizing a system to a facility's load is irrelevant. As noted in the response to question #1, a FIT can also be used to target certain segments of the market that are not properly served under the current set of policies. At the same time, these realities could undermine the principles for distributed energy in the RES.

The other widely touted advantage of FITs - ease of administration - may apply to some extent, but due to the fact that other types of incentives (particularly at the federal level) will still be in place, this particular benefit will not be fully realized.

The main disadvantage of a FIT compared to a PBI lies mainly in the cost to implement such an incentive (see 2c). A PBI can be described as the value associated with the RECs (Renewable Energy Certificates, or environmental attributes), whereas a FIT must include the value of both RECs and the power produced by the solar electric system. This means that the FIT would always cost more for electric generating resources.

To illustrate, if a solar electric system owner normally pays the utility $0.10/kWh for electricity and receives a $0.16/kWh PBI, all other things being equal, that solar system owner would have to receive $0.26/kWh from a FIT program (meaning the program pays out $0.26/kWh rather than $0.16/kWh) since under a FIT the solar system is no longer being used to offset the building's power consumption (the system feeds directly into the grid).

e. What are the comparative advantages or disadvantages of a FIT versus a UFI?

Some advantages of a FIT versus a UFI are similar to the advantages of a PBI relative to a UFI: 1) the cost to the program is spread out over a longer period and does not require the same amount of up-front cash to administer, and 2) both the PBI and FIT are "pay as you go" meaning that the solar system owner gets paid for actual production of the system, rather than the promise of future production in a UFI.

The advantage of a FIT as relates to the issue of net metering for solar electric systems (see previous question) also applies when comparing a FIT to a UFI as does the potential for using a FIT to target certain market segments. By the same token, even though a FIT is paid out over the long run, compared to a UFI, the cost of a FIT (taking its Net Present Value) would likely be higher than a UFI because the FIT rate would include the value of both RECs and power.

f. **Would the adoption of a FIT affect the analysis of whether owners of distributed generation systems are public services corporations? If so, how?**

Although a full legal analysis would be needed, because the owners of FIT-eligible systems feed electricity directly grid and at no point would the sale of electricity be made to individual customers, it is likely that they will be classified as merchant generators and not Public Service Corporations.

g. **If owners of distributed generation systems are somehow public service corporations under a FIT, would the Commission have to determine the fair value of each system before approving the FIT?**

Please see previous response. It is our understanding that in the case of a FIT, by selling directly to the grid (or to a regulated utility) this does create the situation currently being debated at the Commission.

3. **If you believe the Commission should develop a policy to support procurement of wholesale distributed generation resources, what policy goals should guide the development of such a program? For example, is the goal to guarantee reasonable profit to developers, provide for procurement at lowest cost to ratepayers, promote local economic activity, etc? The Commission has developed a draft list of policy goals that might guide the development of a FIT program for AZ. Please comment on the proposed policy goals. Please also provide a response to this question if you answer in the affirmative to question 2.**

The Commission's goals as outlined in Attachment A: Draft Commission Goals for Feed-In-Tariff are commendable and we support the Commission in wanting to see these goals achieved. However, we also realize that some of these goals may conflict, and thus, it is important to prioritize these goals.

We recommend the following guiding principles be used in helping to prioritize which goals are most important:

- Policies must be cost effective to the ratepayers and the state
- Policies must be easy to administer
- Policies must encourage healthy competition and not lead to the creation of monopolies or oligopolies
- Policies must be sufficiently flexible in order to respond to an evolving market without disrupting the pace of adoption and causing unnecessary hardship to those who are faced with implementing the programs (both on the utility and the solar system owner side)
- Policies must benefit a range of technologies.
- Policies must work in conjunction with the REST.

4. **What is the appropriate size range of projects to target? What is the size of the potential market for projects in the size range you suggest?**

While there is no "most appropriate" size range to target, it is important to note that solar projects benefit from economies of scale, meaning larger projects cost less to install and result in a lower cost per kWh/Btu to produce. At the same time, there are quantifiable benefits (not reflected in the installed cost of the solar system) such as job creation and other savings on the part of the utility from distributed energy as the Commission is well aware. Thus, we recommend a mix of system sizes, as well as centralized and distributed systems, which is what can typically be found in a healthy solar market. Additionally, the Commission should consider the RES definition discussed at the beginning of this document.

   a. **Would a FIT provide a benefit to rural areas, urban areas, or both? Why or why not?**

FITs can benefit a particular sector of a market based on how rates are structured, but this applies to other types of incentive programs as well. For example, rates can be biased (regardless of whether you are using a UFI, PBI or FIT) towards developing rooftops, rather than ground-mounted systems. This encourages the use of existing (built-up) space, which has other (including environmental) benefits.

   b. **What benefits would procurement from projects in this size range provide to AZ ratepayers? Would FIT assist utilities in more quickly meeting their overall RES requirements, particularly in light of the apparent difficulty facing large-scale projects in achieving financing?**

Please see previous response. If an incentive level is set appropriately and the regulatory environment is conducive, there should be no problem financing projects of any size as is evidenced in other markets such as CA and NJ. A

factor that affects the viability of a project from an investor's perspective is the reliability and predictability of the technology, as well as the project developer.

c. **Should it be used as an incentive for higher value locations, such as recognized congestion zones or areas with anticipated higher capital costs?**

As noted previously, the level of incentive payment, regardless of whether it is a FIT, PBI or UFI is more important than the type of incentive. If the Commission wishes to incentivize solar projects in particular locations, the best way to do so is to offer a higher rate of whatever incentive type is being offered.

d. **Should it be used as a tool to attract customers who would otherwise be unable to make use of current programs such as Non-Profits, Non-taxable entities, Home Owner Associates and *multi-family dwellings*?**

As previously noted, having a more attractive rate or type of incentive at the local level will have limited impact if the system owner is unable to make use of the federal incentives such as the 30% Investment Tax Credit and other tax-related incentives (e.g. bonus and accelerated depreciation, etc.). The ITC is a significant driver in making the economics of solar work. Solar needs to make full use of ALL incentives available in order to make economic sense in Arizona and other markets.

5. **Should the Commission adopt a statewide FIT, or should FITs vary by utility?**

As previously noted, one advantage of a FIT is ease of administration. Having a different FIT for each utility would somewhat defeat this purpose.

6. **In light of the proposed policy goals, what would be the most appropriate procurement method to use in procuring power from projects in the size range you recommend, and what cost or capacity limits should be applied to the program?**

In light of the Commission's policy goals, the most important consideration should be to identify what incentive rates are most conducive to procuring power from the desired sources, regardless of the form of incentive (UFI, PBI or FIT). However, it is also very important to have policies in place that minimize the possibility of applicants gaming the system and creating a false picture of the market. This phenomenon occurred during the development of the CA and NJ markets and we have reason to believe that it is also taking place in AZ. Greater transparency into the process will help address this challenge.

7. **Assuming a capped program, on what basis should winning contracts be selected?**

Assuming the technology and the developer are legitimate, cost is a common metric to use in selecting which projects ought to be developed. However, it is important to note that using cost as the sole metric can lead to the domination of the market by a handful or large players and shut out smaller, valid, projects and developers.

Most successful solar markets (including Germany and California) simply set a price, which declines over time when certain milestones are reached and allows the market to function on its own. These have many of the elements currently in the UCPP. We believe that the UCPP is functioning well and, if a FIT is incorporated as a new program, should have many of those elements.

Most programs operate on a first-come-first-served basis with sufficient deterrents to those who are merely trying to game the system in the form of penalties for failure to comply.

8. **Would projects located in certain areas (e.g. congested areas), provide greater benefits to AZ ratepayers, and if so, how might the Commission focus policy design to promote project development in these areas?**

Studies – including those commissioned by APS – support the benefits of distributed energy and can even quantify those benefits in specific instances. However, this would require a much higher degree of coordination and transparency when dealing with the affected utilities. We would certainly encourage this as a future goal to strive for, but not one that would hamper current development of the market.

9. **Please discuss what price-setting method would be most likely to: a) capture changes in generator costs, b) produce the lowest cost to ratepayers, c) be easiest for Commission and staff and utilities to administer, d) encourage competition, e) be most likely to result in viable projects, f) exert a downward pressure on prices and g) best support the Commission's goals?**

Please see responses to questions 3, 4 & 6. In general, we believe that these questions are best addressed in a workshop.

   a. **Should a FIT be created so as to be based on avoided costs or cost of technology plus a small return on investment?**

As evidenced by the development of markets where FITs have been introduced, the incentive level must be such that it provides an acceptable rate of return for the solar system owner/ investor.

b. Should the rates be a fixed premium or a variable premium on price?

As noted in the previous response, a FIT should reflect the return on a solar investment and does not relate directly to the current cost of electricity or other fossil fuels in the market (which is likely to be significantly lower than the FIT rate).

c. Which technologies should be eligible to participate in this program?

AriSEIA recommends that *all technologies defined* as "renewable" under the current RES be eligible to participate.

The question of what rate to price each technology at for the purposes of a FIT should be answered through a more detailed analysis, starting with the proposed workshop.

d. Should the FIT rate be the same for all qualified technologies, irrespective of technology type or generator size? If not, why?

Since different technologies at different scales under different operating conditions yield different economic returns, rates must be adjusted to reflect these conditions.

e. Should it vary depending on time of day and reward generators more for on-peak production than for off-peak production? If not, why?

This question is best answered once the merits of a particular incentive type (e.g. FIT vs PBI vs UFI) have been evaluated and prioritized. This applies to both FITs and PBIs. The question of setting appropriate rates is an important one and should be dealt with after identifying what types of incentives to use. As a general rule, however, peak production should probably receive a slightly higher incentive.

f. What should be the applicable payment term of a FIT? 5, 10, 15 or 20 years?

Since the life expectancy, for example, of a solar PV system (based on typical manufacturer's warranties) is approximately 25 years, a FIT (as well as a PBI) should attempt to match this most closely. This is particularly important in the

case of a FIT, since at the end of the payment stream, the solar electric system could still be feeding into the grid with no benefit to the system owner (since again, the solar system is not offsetting a load). In the case of a PBI, the solar system would continue to supply power to the building that it was installed on even after the incentive payments ended, resulting in value for the system owner.

Other technologies may have varying life expectancies and possible terms for those should be adjusted accordingly. A shorter payment stream might be more appropriate in those cases.

10. **In light of the policy goals and procurement mechanism you recommend, what additional elements must the Commission consider, e.g. standard contract development, rate recovery for regulated utilities, contract approval requirements, etc?**

The above initiatives (with perhaps the exception of contract approval requirements) are commendable goals for the Commission. However, these can and should be addressed as separate (albeit related) issues from the one at hand. AriSEIA generally prefers a policy in which all issues related to an FIT can be handled primarily in one forum, similar to the RES, as opposed to various rate cases and other processes for various utilities.

11. **How should this new program fit into existing renewable energy requirements? Should it be additive to the RES requirement?**

Since a FIT, as presented here, would be an incentive to further expand solar and other renewable distributed (retail and wholesale) deployment, we strongly encourage that it be additive to the RES requirement, thus raising the bar on the amount of Renewable Energy to be developed in Arizona.

Please note previous response. Having a FIT program in addition to the RES requirements means that this would not have any bearing on the current DE/ Non-DE RES requirements.

If a FIT program were to become part of the RES, it might be easier to administer on the non-DE side of the RES so as not to disrupt what is already taking place on the DE side. As noted in response to question 1, including this as part of the RES DE has additional limitations.

a. **Should all FIT expenses be recouped via the RES surcharge? If not, how should they be recouped?**

We are not aware of how else they could be recouped in a cost-effective or politically acceptable manner but are open to discussion amongst the stakeholders to identify possible solutions/ options.

12. **Should there be any additional restrictions or prioritization of siting opportunities (e.g. should the program be restricted to rooftops, etc.)?**

See response to question #8.

13. **Are there legal or jurisdictional issues that should be considered in the development of a FIT program? If so, how might the Commission address those concerns in the design of the program?**

This is a subject that should be dealt with in the workshop.

14. **Please discuss any additional elements that the Commission should consider.**

We strongly encourage a more open and inclusive dialogue with the industry and its recognized representatives, through organizations such as AriSEIA, who are directly affected by any resulting policies that come from this initiative. It is also important to perform due diligence on parties who submit feedback to establish that their claims are accurate, reliable and indicative of what is truly taking place in the market/ industry. The overriding guiding principle in the development of a FIT should be to enhance Arizona's program and not detract from it.